Work Order ID 102765  June-12-13 9:13:40 AM	*	102	765*						Page 1
Item ID: D3121-21  Revision ID:  Item Name: Bolt  Start Date: 6/11/13 Start Qty: 49.00 *40	Accept		*N900		100	<b>)*</b> s	Setup Star	1.71	S1* S2*
Required Date: 6/11/13 Req'd Qty: 40.00 *40	*		Customer:				_		
Approvals: Process Plan:ML5 Date:13~06-	J Toolin	g:	D:	ate:		R	Run Star	!/	R1*
QC: Date:	SPC (Y	Y/N):	D	ate:			Stop	*N	R2*
Sequence ID/ Operation Work Center ID Description	Set Rur	Up/ i Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr Revision Nbr						-			
D3121 Rev E									
*100  *100  Hardinge CNC LATHE SMALL  Hardinge CNC Lathe Small  1-Turn D3121-21 2-Identify as D3 0.005" to 0.010"	0.00 0.00 121-213-Debur	r break all sh	·	106/2	3	6	\$_		
110 QC2- Inspect parts off machine FAI/FAIB	0.00	•							
*110* QC Memo Quality Control	0.00		SAA 13	106/2	3	60	<u>Ø</u> _	4	
QC8- Inspect parts - second check  *120  QC8- Inspect parts - second check  Memo  Quality Control	0.00		13-6-2	Y		60	6		DAS 13

n . . .

DQA:			Date:										•	<sup>™</sup>
OA Classed			Data			WORK ORDER NON	-CC	ONFO	RMANCE / UPDATE	14/	ork Order up	adata anlu I		AEROSPACE
QA Closed:			Date:			······································				VV	ork Order up	date only		
Work Orde	er:					DISPOSITION			AGAINS	ST DE	PARTMENT	/PROCESS		
	_					Rework	1		Skid-tube Crosstuk	оеГ	]	Water Jet		Engineering
Part N	No.					Scrap	1		Machining Small Fa		Pro	d. Eng. Coor.	$\Box$	Quality
			,			Use-as-is		Therr	noforming Finishir	ng	Rec/Sto	re/Packaging		Other
NCR N	No					Suspected Unapproved			Large Fab Composi	te		Supplier		
											_			
Root				,	Descr	iption of work order update	I	nitial	Action		Sign &			
Cause		Date	Step	Qty		or non-conformance	Ch	ief Eng	Description		Date	Verification	n	QC Inspector
Design				] [									l	
Doc/Data													l	
Equip/Tooling	Щ						1							
Handling/Pre													į	
Material													ł	
Operator				1										
Offset/Setup													Ì	
Process							}							
Supplier						_								
Training							1							
Transport														
Unapproved														
						10 M	FAI	ULT CA	TEGORY					
Landi	ng Gea	ar				General		,		_	7			
	Be	ending				Bend		Folio/F	Program		Outside Dim			Pressure/Forced
•	Ce	entre No	t Concer	ntric		BOM/Route	<u></u>	Grain			Over/Under	tolerance	$\vdash$	Set-up
	Cr	acks				Broken/Damage/Defect		Hardwa	are		Part Incorred	ct	$\blacksquare$	Temperature/Cure
	∐ Cr	imp/Kin	ık/Ripple	/Wave		Burrs	<u></u>	Inspect	ion Incomplete/Unqualified		Part Lost/Mi	issing	Ш	Weld
	cı	uffs				Contamination		4	tions Incomplete/Unclear		Part Moved	:		Wrong Stock Pulled
Ţ.*	· Cr	ushing				Countersink		Misali	gned/off center	L	Positioned V	Vrong		
	Heat Treat			Cut Too Short		Mislab	eled		Power Loss/	Surge		Other		
	In:	spection	Strip in	Tube		Drawing		Misrea	d					
	Шм	arks/Ch	atter			Drill Holes		Off-set						
	_		equence			Finish		Out of	Calibration					
	w	/ave/Twi	ist in Tub	oe		Fit/Function		Out of	Sequence					

Work Ord June-12-13 9:1		2765		*10:	2765*	AND THE STREET, STREET					4-17-340	Page 2	
Item ID: Revision ID: Item Name:	D3121-21 Bolt			Accept	*N900	<b>040</b>	100	<b>)</b> *	Setup	Start Stop	14.	S1* S2*	Marketta Markett
Start Date: Required Date Reference:	6/11/13	Start Qty: 40.00 Req'd Qty: 40.00	*40* *40*		Cust Item II Customer:	D:					ı d.	. 1/	
Approvals:	Process Pla	an:	Date:	Tooling: SPC (Y/N):		te:	·	I	Run	Start Stop	1/1	R1* R2*	
Sequence ID/ Work Center I	ID .	Operation Description Identify as per dwg & Sto	ock Location:	Set Up/ Run Hours	Tool ID	Tool#	Plan Code	Accept Qty	Re Qt		Reject Number	Insp. Stamp	
*130* Packaging Packaging		Memo		0.00				(00)	Κ		(	3-6	-94
*140 *140* QC Quality Control		QC21- Final Inspection -  Memo	Work Order Release	0.00					13/		25 04	<u>}</u>	
				!						4	· 24		

d13-06-24

DQA:		Date:	·										•	<b>™</b> ∩ΔPT
		D-4-			WORK ORDER NON-	-CC	ONFO	RMANCE / UI	PDATE		1.0.1		_	AEROSPACE
QA Closed:		Date:				_	ř			W	ork Order up	date only		. "/
Work Orde	er:				DISPOSITION				AGAINST	DE	PARTMENT	/PROCESS		
					Rework			Skid-tube	Crosstube		1	Water Jet	$\neg$	Engineering
Part N	lo.				Scrap		I 🛏		Small Fab	<b></b>		<u> </u>	$\exists$	Quality
				····	Use-as-is		Thermoforming		Finishing		Rec/Store/Packaging		┨	Other
NCR N	lo.				Suspected Unapproved		· -		Composite			· · · · · · · · · · · · · · · · · · ·	╗	
														· · · · · · · · · · · · · · · · · · ·
Root				Desci	ription of work order update	i	Initial	Act	ion		Sign &			
Cause	Date	Step	Qty		or non-conformance	Ch	nief Eng	Descr	iption		Date	Verification	$\perp$	QC Inspector
Design														
Doc/Data											•		ı	`
Equip/Tooling														
Handling/Pre												<u> </u>		
Material	_												١	
Operator														
Offset/Setup	_													
Process													1	
Supplier	_													
Training	_		1											
Transport														
Unapproved			<u> </u>	<u> </u>				55000			<u> </u>			
						FAI	ULI CAI	regory			· ·			
Landir	ng Gear	_			<b>General</b> Bend		leatio (n	rogram			Outside Dim	ansians [	一,	Pressure/Forced
}	Bending	s Not Conce	ntria	-	BOM/Route	<u> </u>	Grain	Togram		$\vdash$	Over/Under	<b>}-</b> -		Set-up
}	Cracks	NOT COLICE	IIIIIC		Broken/Damage/Defect	$\vdash$	Hardwa	ro		⊢	Part Incorre	F	$\dashv$	Temperature/Cure
}		(ink/Ripple	/\ <i>\\</i> 2\\0	-	Burrs	$\vdash$	-	ion Incomplete/Un	anualified	-	Part Lost/Mi	<b>⊢</b>		Weld
	Cuffs	шилирріс	:/ wave		Contamination	$\vdash$	1	ions Incomplete/U		-	Part Moved	1331116	$\dashv$	Wrong Stock Pulled
	Crushin	ρ		-	Countersink	<del> </del>	4	ned/off center	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	$\vdash$	Positioned V	L Vrong		T. Sing Stock Failed
	Heat Tr	_			Cut Too Short	$\vdash$	Mislabe			$\vdash$	Power Loss/	_	$\neg$	Other
,	<b>─</b>	on Strip in	Tube		Drawing		Misread			Ь	1 - 11 - 1 - 2 - 2 - 2 - 3 - 3 /			· -·
Ì	Marks/0	٠,			Drill Holes	$\vdash$	Off-set							
		Sequence			Finish		-1	Calibration						
		wist in Tul			Fit/Function	$\Box$	4	Sequence						

**Picklist Print** 

June-12-13 9:13:40 AM

Work Order ID:

102765

Parent Item:

Comments:

D3121-21

Parent Item Name:

Bolt

IPP A04.02.09New issueKJ/DS

IPP Rev:B ECN 1060 07-11-12 DD verified by:EC

**Start Date:** 6/11/13

Required Date: 6/11/13

Page 1

Start Qty: 40.00

Required Qty: 40.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M303H0.500 303 HEX BAR .500		Purchased	No			110	f	14.5850	0.0417	1.668			
505 1121 21 20 10 00 0				Location MAT018	761	Loc Qty 14.585 14.585		oc Code	2.	75 OA	13	106/3	23

DQA:		D	ate:											ADT
						WORK ORDER NON-	-CC	ONFO	RMANCE / UPDATE			_	,	AEROSPACE
QA Closed:		D	ate:						·	W	ork Order u	odate only		· · ·
Work Orde	er:					DISPOSITION			AGAINST	DE	PARTMENT	/PROCESS		
						Rework		Skid-tube Crosstube			]	Water Jet	ΠE	ngineering
Part N	١٥.				•	Scrap			Machining Small Fab	-	· Pro	d. Eng. Coor.		Quality
						Use-as-is		Therr	noforming Finishing		Rec/Sto	re/Packaging		Other
NCR N	NCR No.				Suspected Unapproved Large Fab Composite					Supplier				
Root					Descr	iption of work order update	1	nitial	Action		Sign &			
Cause	Dat	te S	tep	Qty		or non-conformance	Ch	ief Eng	Description		Date	Verification	1	QC Inspector
Design														
Doc/Data														
Equip/Tooling		<u>,</u>	न्त्र पु		i									
Handling/Pre														
Material														
Operator														
Offset/Setup						•								
Process						-								
Supplier														
Training														
Transport														
Unapproved														
							FAL	ULT CA	TEGORY					
Landi	ng Gear					General		_			-			
	Bendi	ng				Bend		Folio/F	Program		Outside Dim	ensions	Pre	ssure/Forced
	Centr	e Not Co	oncen	ntric		BOM/Route		Grain			Over/Under	tolerance	Set	t-up
	Crack	S				Broken/Damage/Defect		Hardwa	are		Part Incorre	ct	Ter	nperature/Cure
	Crimp	/Kink/R	ipple,	/Wave		Burrs		Inspect	ion Incomplete/Unqualified		Part Lost/Mi	issing	We	eld
	Cuffs					Contamination		Instruct	tions Incomplete/Unclear		Part Moved	1	wr	ong Stock Pulled
	Crush	ing				Countersink		Misali	gned/off center		Positioned V	Vrong		
	Heat	Treat				Cut Too Short		Mislabe	eled		Power Loss/	Surge	Oth	ner
	Inspe	ction Sti	rip in	Tube		Drawing		Misrea	d				-	
	Mark	s/Chatte	er			Drill Holes		Off-set						
	Turni	ng Sequ	ence			Finish		Out of	Calibration					<u> </u>
	Wave	/Twist i	n Tub	e		Fit/Function		Out of	Sequence					

H:/FORMS/Quality Assurance\approved QA/NCRWO RevH

DART AEROSPACE LTD	Work Order:	102765
Description: Bolt	Part Number:	D3121-21
Inspection Dwg: D3121 Rev: E		Page 1 of 1

### FIRST ARTICLE INSPECTION CHECKLIST

X First Article Prototype

		<del></del>				
Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
0.375	+/-0.010	.376	7		FK-04	Vern.
0.050 - 0.060	N/A	£20°	,		h	ч
0.080	+/-0.010	1080			h	4
10-32UNF3A	N/A	10-32 UNF3A			T-9	
Major Diameter	Max: 0.190 Min: 0.184	, 187	)		\$FK-09	Mic
Over wi <b>re</b>	Max: 0.2146 Min: 0.2123	. 2131	7		1,	h
		r				
						· · ·
			<u>.</u>			
	OAS		Da			
Massured by:	44	Audited by:	3/3 DAG		Prototyne An	proval: N/A

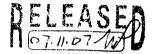
Measured by: 44 Audited by: 28 Prototype Approval: N/A

Date: 13/06/23 Date: 13-6-24 Date: N/A

Rev	Date	Change	Revised by	Approved
Α	04.02.27	New Issue	KJ/RF	
В	06.03.09	Dwg Rev. updated	KJ/JLM	
С	06.06.14	Dwg Rev. updated	KJ/JLM	Ĭ
D	08.01.16	Dwg Rev. updated	KJ/EC/DD,	
E	08.07.23	Dimensions updated	KJ/DD	<i>X</i>
		,		~



DESIG	#	LE LE	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
CHEC	KED	APPROVED	DRAWING NO. REV. E
	#	#	D3121 SHEET 1 OF 10
DATE			TITLE SCALE
 07.1	11.07		BRACKET ASSEMBLY 1:2
Α		02.04.15	NEW ISSUE
В		03.01.16	ADD RIDGES; ADD MAT'L PROP; FIX P/N ADD -141/-143/-144/-145/-146
С		04.02.17	ADD CLEARANCE; USE -241 BEARING
D		06.05.17	D3121-25 CAP WAS 1.024, NOW 1.000
Ε		07.11.07	ADD TOLERANCE TO 0.032 (DETAIL B)

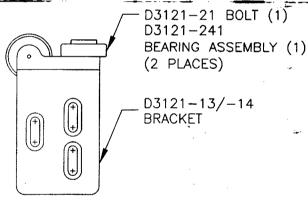


- D3121-21 BOLT (1) D3121-241 BEARING ASSEMBLY (1)

#### D3121-041 BRACKET ASSEMBLY

(REPLACES PREMIER P/N B30-23000-33)

D3121-11 BRACKET



D3121-21 BOLT (1) D3121-241 BEARING ASSEMBLY (1) (2 PLACES)

- D3121-15/-16 BRACKET

D3121-043 (SHOWN) / D3121-044 (OPPOSITE) BRACKET ASSEMBLY

(REPLACES PREMIER P/N B30-23000-37/-38)

SHOULDS WE SHOULD STAND TO THE STAND SHOULD STAND TO THE STAND TO STAND TO THE SHOULD SHOULD

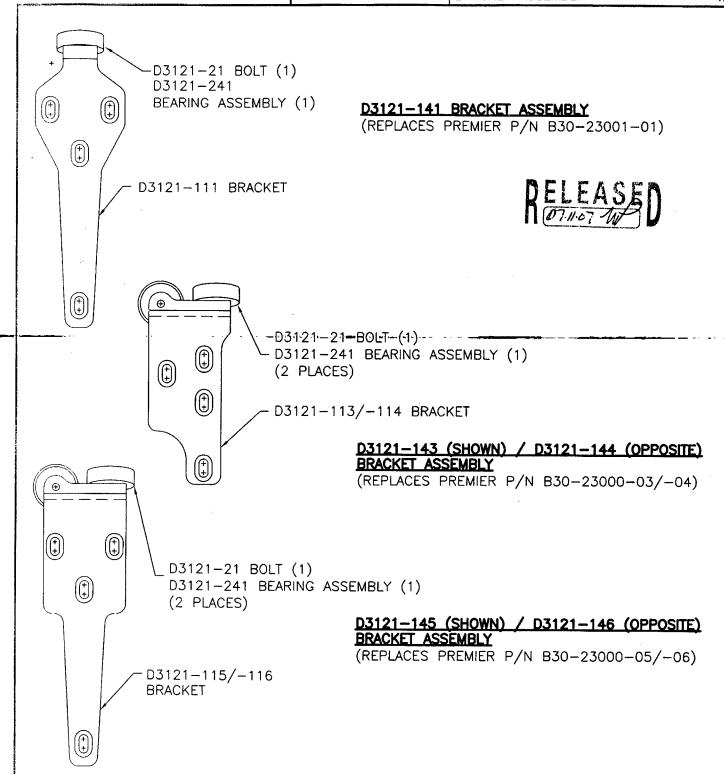
D3121-045 (SHOWN) / D3121-046 (OPPOSITE)
BRACKET ASSEMBLY

(REPLACES PREMIER P/N B30-23000-35/-36)

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DESIGN	DRAWN BY	DART AEROS HAWKESBURY, ONT.	
CHECKED	APPROVED	DRAWING NO.	REV. E
#	-	D3121	SHEET 2 OF 10
DATE		TITLE	SCALE
07.11.07		BRACKET ASSEMBLY	1:2

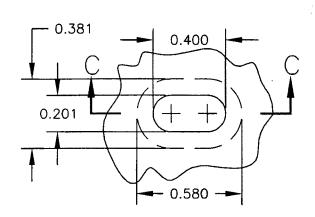


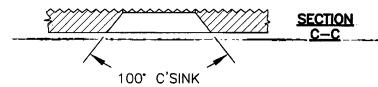
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DESIGN	A DRAV	WN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKE	D APPE	ROVED DRAWING	· <del>·</del> ·	/. E
DATE	7/1	TITLE		ALE
07.1	.07	BRAC	CKET ASSEMBLY	1:1



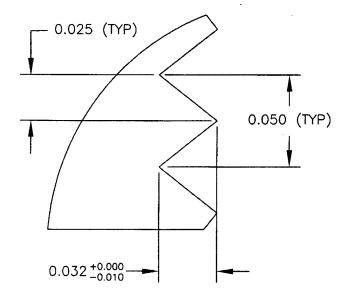




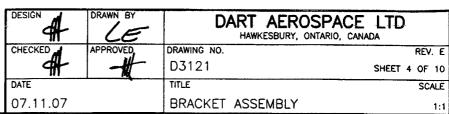


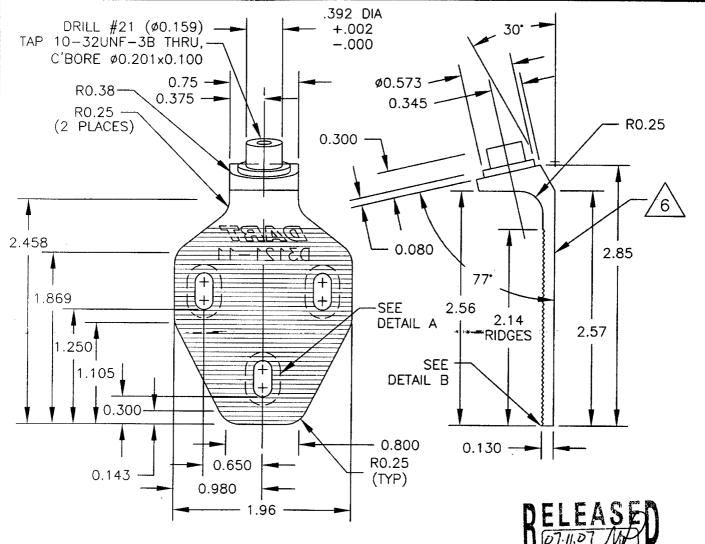
### **DETAIL B:** RIDGE DETAIL PARTIAL SECTION

SCALE 1:20









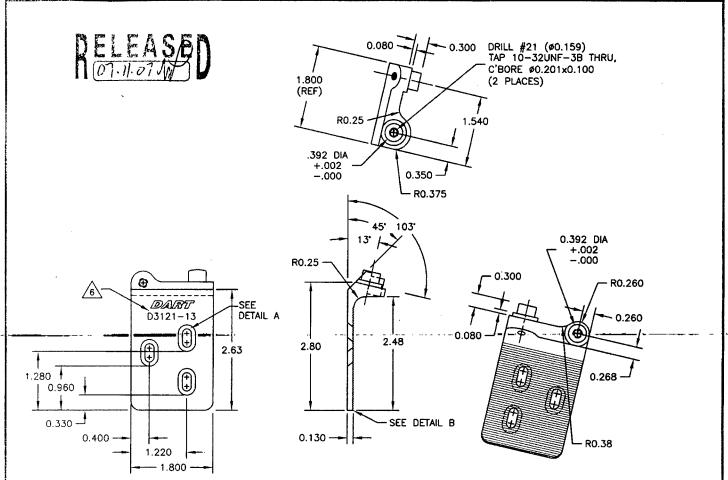
### D3121-11 BRACKET

- 1) MATERIAL: 17-4 SS PER AMS 5604/5643 (REF DART SPEC. M17-4-B)
  MIN ULTIMATE TENSILE = 150 ksi
  MIN YIELD TENSILE = 100 ksi
- 2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 3) ALL DIMENSIONS ARE IN INCHES
- 4) BREAK ALL SHARP EDGES 0.005 TO 0.015
- 5) ENGRAVE DART P/N & LOGO AS SHOWN
- 6) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

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CHECKED	APPROVED	DRAWING NO.	REV. E
4	<b>-</b>	D3121	SHEET 5 OF 10
DATE		TITLE	SCALE
07.11.07		BRACKET ASSEMBLY	1:2



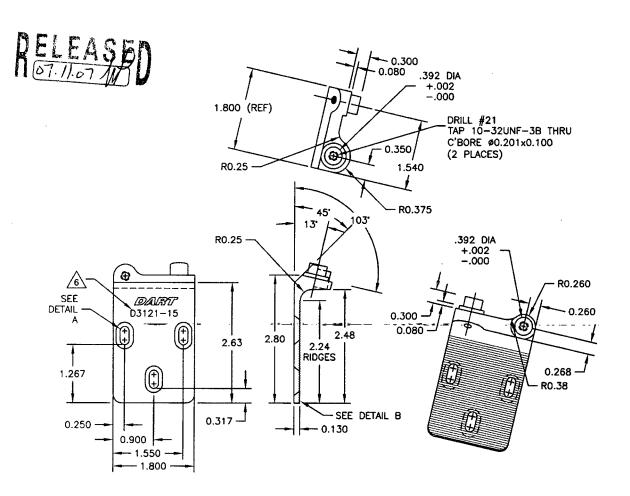
## D3121-13 BRACKET (SHOWN) D3121-14 BRACKET (OPPOSITE)

- 1) MATERIAL: 17-4 SS PER AMS 5604/5643 (REF DART SPEC. M17-4-B)
  MIN ULTIMATE TENSILE STRENGTH = 150 ksi
  MIN YIELD TENSILE STRENGTH = 100 ksi
- 2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 3) ALL DIMENSIONS ARE IN INCHES
- 4) BREAK ALL SHARP EDGES 0.005 TO 0.015
- 5) ENGRAVE DART P/N & LOGO AS SHOWN
- 6) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

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CHECKED	APPROVED	DRAWING NO.	REV. E
91		D3121	SHEET 6 OF 10
DATE		TITLE	SCALE
07.11.07		BRACKET ASSEMBLY	1:2



# D3121-15 BRACKET (SHOWN) D3121-16 BRACKET (OPPOSITE)

- MATERIAL: 17-4 SS PER AMS 5604/5643 (REF DART SPEC. M17-4-B)
  MIN ULTIMATE TENSILE = 150 ksi
  MIN YIELD TENSILE = 100 ksi
- 2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 3) ALL DIMENSIONS ARE IN INCHES
- 4) BREAK ALL SHARP EDGES 0.005 TO 0.015
- 5) ENGRAVE DART P/N AND LOGO AS SHOWN
- 6) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

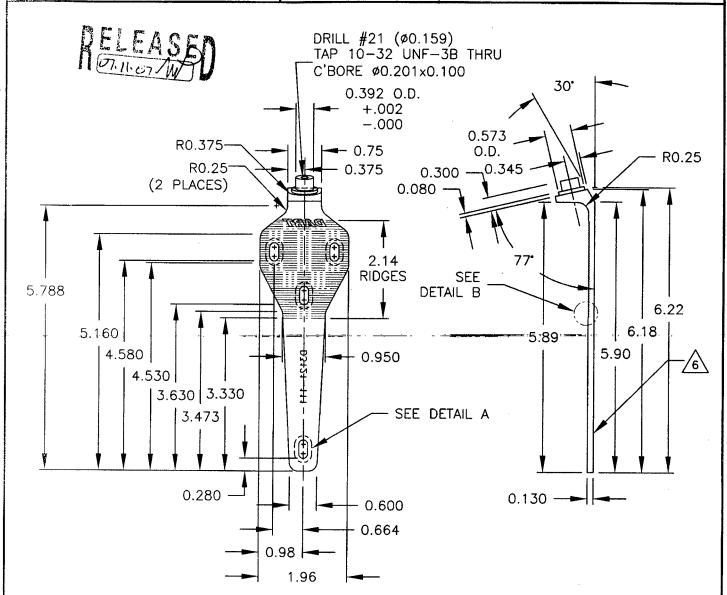
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102765



DESIGN A DRAWN BY		DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO.	REV. E
44		D3121	SHEET 7 OF 10
DATE		TITLE	SCALE
07.11.07		BRACKET ASSEMBLY	1:2



#### D3121-111 BRACKET

- 1) REPLACES PREMIER P/N B32-23001-11
- 2) MATERIAL: 17-4 SS PER AMS 5604/5643 (REF DART SPEC. M17-4-B) MIN ULTIMATE TENSILE = 150 ksi

MIN YIELD TENSILE = 100 ksi

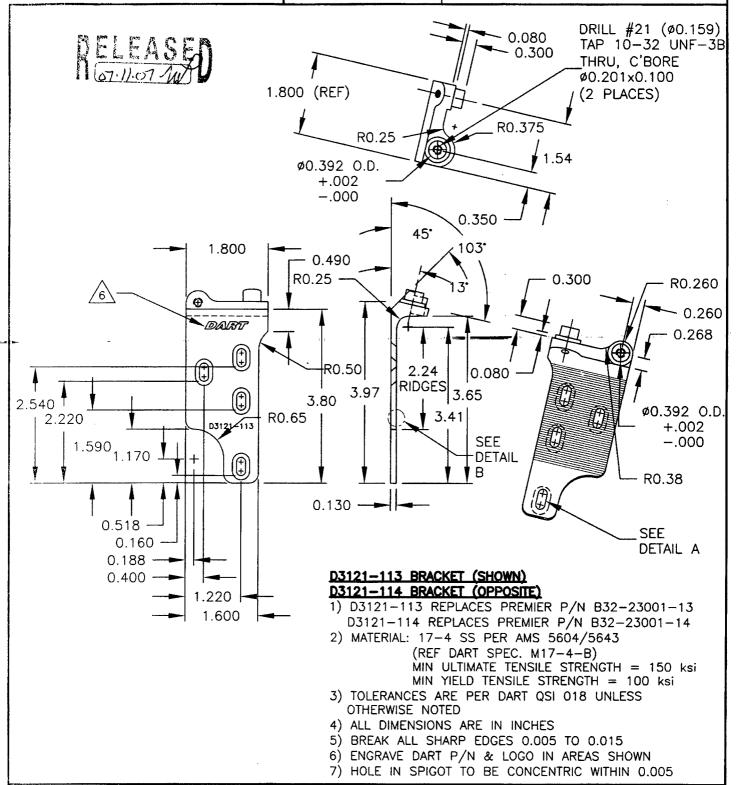
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHEWISE NOTED
- 4) ALL DIMENSIONS ARE IN INCHES
- 5) BREAK ALL SHARP EDGES 0.005 TO 0.015
- 6) ENGRAVE DART P/N & LOGO IN AREAS SHOWN
- 7) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

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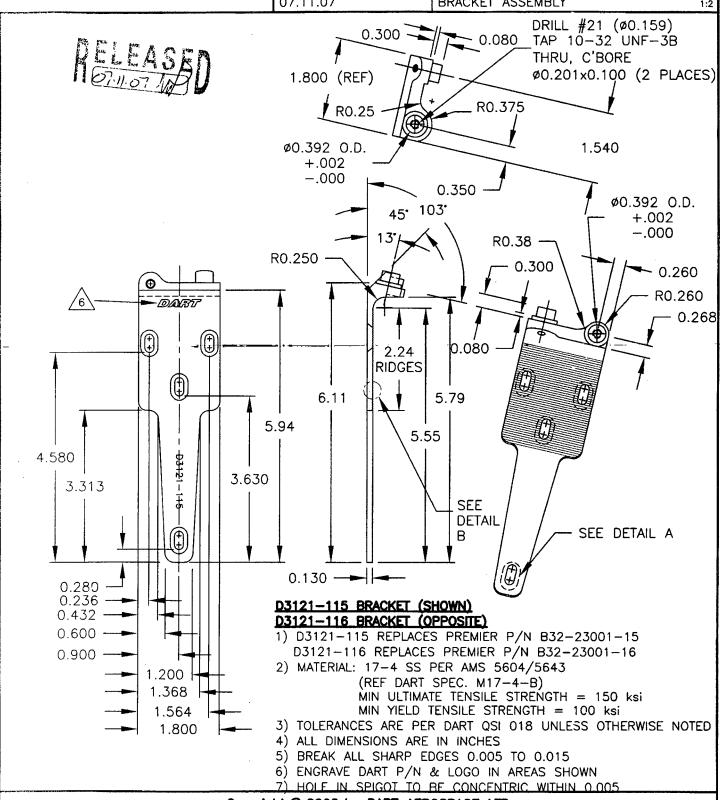


DESIGN A DRAWN BY		DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO.	REV. E
#	-#	D3121	SHEET 8 OF 10
DATE		TITLE	SCALE
07.11.07		BRACKET ASSEMBLY	1:2





DESIGN DRAWN BY		DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO.	REV. E
#F	<b>-</b> #-	D3121	SHEET 9 OF 10
DATE		TITLE	SCALE
07.11.07		BRACKET ASSEMBLY	1:2

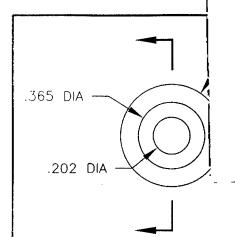


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OW = . 2146

- 0.096



D3121-17 WASHER (SCALE 2:1)

1) REPLACES PREMIER P/N B32-23001-17

2) MATERIAL: AISI 303 SS ROUND BAR, ANNEALED (REF DART SPEC. M303R)

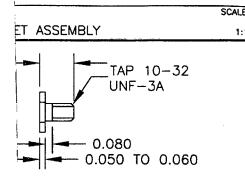
2782

## DART AEROSPACE LTD

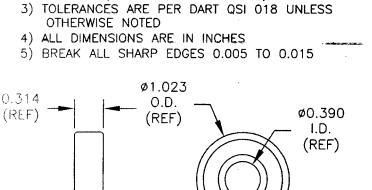
HAWKESBURY, ONTARIO, CANADA

REV. F

SHEET 10 OF 10

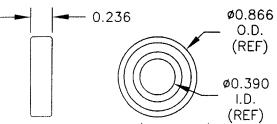


- LT (SCALE 1:1)
- 1) MATERIAL: AISI 303 SS HEX, ANNEALED (REF DART SPEC. M303H0.500)
- 2) FINISH: NONE
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED\
- 4) ALL DIMENSIONS ARE IN INCHES
- 5) BREAK ALL SHARP EDGES 0.005 TO 0.015



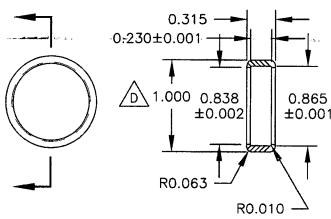
D3121-19 BEARING (SCALE 1:1)

- 1) POSSIBLE SUPPLIER: KING BEARING P/N 6000-2ZJ/EM FAFNIR P/N 9100KDD
- 2) ALL DIMENSIONS ARE IN INCHES



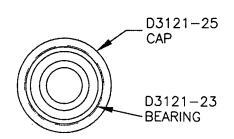
D3121-23 BEARING (SCALE 1:1)

- 1) POSSIBLE SUPPLIER: SKF P/N 61900-2Z OR KML P/N 6900-ZZ
- DIMENSIONS ARE IN INCHES



D3121-25 CAP (SCALE 1:1)

- 1) MATERIAL: DELRIN ROD, Ø1.25 (REF DART SPEC. M-DELRIN-R1.250)
- 2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 3) ALL DIMENSIONS ARE IN INCHES



D3121-241 BEARING ASSEBLY (SCALE 1:1)

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